

**Alkalinity by Titration****SM 2320B-1997 (2011)**

*ADDITIONAL QC REQUIREMENTS FOR THIS METHOD: Certified or Accredited laboratories using this method are assessed to applicable requirements of SM 1020 and SM 2020.*

Facility Name: \_\_\_\_\_ VELAP ID: \_\_\_\_\_

Assessor Name: \_\_\_\_\_ Analyst Name: \_\_\_\_\_ Inspection Date: \_\_\_\_\_

Records Examined: SOP Number/ Revision/ Date: \_\_\_\_\_ Analyst: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Date of Sample Preparation: \_\_\_\_\_ Date of Analysis: \_\_\_\_\_

Relevant Aspect of Standards	Method Reference	Y	N	N/A	Comments
<b>Method Specific Requirements:</b>					
1) Are samples collected in clean polyethylene or borosilicate glass bottles, filled completely and capped tightly?	2320 B.1.f 2310 B.1.f				
2) Are samples preserved at ≤6°C and analyzed within 14 days of collection?	40CFR136.3 Table 1I				
3) Does the laboratory NOT filter, dilute, concentrate or otherwise alter samples?	2320 B.1.C 2320 B.4.b				
4) Is 0.1N H <sub>2</sub> SO <sub>4</sub> (or HCl) standardized against 40.00 mL of standard 0.05 N sodium carbonate solution?	2320B.3.b				
5) Is standard sodium carbonate dried 4h @ 250°C and cooled in a desiccator prior to preparing the solution?	2320B.3.a				
6) Is standard 0.05N sodium carbonate solution NOT stored longer than one week?	2320B.3.a				
7) For H <sub>2</sub> SO <sub>4</sub> standardization, is the sodium carbonate titrated to pH 5, then boiled gently 3-5 minutes while covered by a watch glass, and allowed to cool to room temperature before completing the titration to the end point of pH 4.5?	2320B.3.b				
<b>For titration using color change:</b>					
8) If using color indicators, does the lab prepare and titrate an indicator blank?	2320.B.1.d				
9) For color indicator titration to pH 4.5, does the lab use [ ] Bromcresol green indicator? [ ] Mixed bromcresol green-methyl red indicator?	2320B.1.b 2310 B.2.a 40CFR136.3				

Notes/Comments

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10) Is the sample checked for chlorine, and if present, treated with Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ?	2320.B.4.a 2310.B.4.b				
<b>For titration to end-point pH or using a potentiometric curve:</b>					
11) For potentiometric titration, is a pH meter with a glass electrode used, readable to 0.05 pH units?	2320B.2				
12) If automatic temperature compensation is not provided, are samples analyzed at 25° +/- 5° C?	2320B.2 2310.B.2.a				
13) Is 0.02N acid solution used for low alkalinity samples (<20 mg/L)?	2320.B.4.d				
14) Is 0.02N H <sub>2</sub> SO <sub>4</sub> (or HCl) standardized against 15.00 mL of standard 0.05 N sodium carbonate?	2320B.3.c				
15) For 0.02N H <sub>2</sub> SO <sub>4</sub> standardization, is the sodium carbonate titrated to pH 5, then boiled gently 3-5 minutes while covered by a watch glass, and allowed to cool to room temperature before completing the titration to the end point of pH 4.5?	2320B.3.b				
16) Does the lab use a 100 – 200 mL sample volume for low alkalinity determination?	2320.B.4.d				
17) For potentiometric titration to end-point pH (for samples >20 mg/L) are results calculated as follows? Alkalinity, mg/L CaCO <sub>3</sub> = (A x N x 50000)/mL sample Where: A = mL titrant, and N = normality of titrant OR Alkalinity, mg CaCO <sub>3</sub> = (A x t x 1000)/mL sample Where: t=titer of standard acid, mg CaCO <sub>3</sub> /mL	2320.B.5.a				
18) For potentiometric titration of low alkalinity samples (<20 mg/L), are results calculated as follows? Alkalinity, mg/L CaCO <sub>3</sub> = [(2B – C) x N x 50000]/mL sample Where: B = mL titrant to first recorded pH, C = mL titrant to reach 0.30 unit lower pH, and N = normality of titrant	2320.B.5.b				

Notes/Comments